

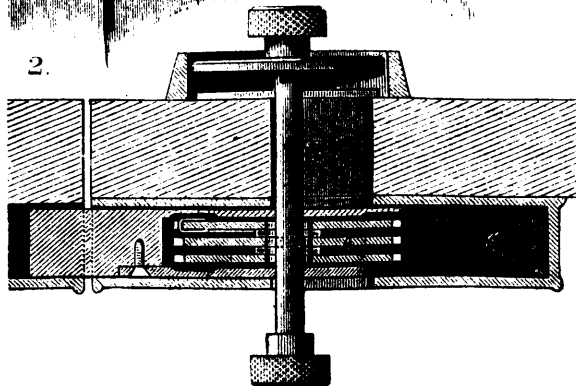
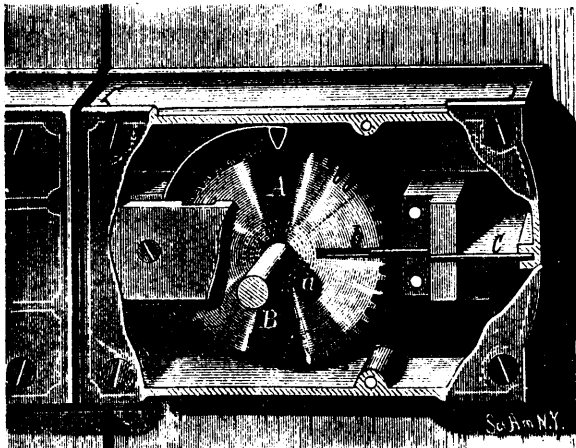
KLIER'S FREIGHT CAR.

IMPROVED PERMUTATION LOCK.

The engraving shows a permutation lock of improved and simplified construction recently patented by Mr. Fred. E. Arnold, of 139 West Harrison street, Chicago, Ill. The bolt is arranged to slide in a seat in the lock casing, and the rear end of the bolt is divided longitudinally into two branches, for engagement with a tongue C, which extends from the end of the lock and which also engages with the teeth on the peripheries of the wheels A.

A shaft, B, extends through slots in the lock casing and through round holes in the bolt and in the centers of the wheels, A, and is provided with knobs or milled heads at the ends for operating it. It is also provided with a pin, *a*, for engaging with notches in the centers of the wheels, A, by which the wheels are turned. The wheels A, are each provided with a radial notch, *b*, for engagement with the tongue, C, when the bolt is moved back.

A spring pawl provided with a tapering nose engages with the teeth of the wheel, A, the fixed end of the spring being attached to the bolt. In this invention the wheels, A, move with the bolt. The bolt being locked, in order to unlock it the shaft or key, B, is adjusted so that the pin, *a*, will engage with the notches of one of the wheels, A, and is turned until the arm shown in the dotted lines abuts against the tongue, *e*. The wheel is then turned in the reverse direction until the radial notch, *b*, is exactly in line with the tongue, C. The shaft is then shifted lengthwise, and the same motions applied to the other wheel or wheels, so as to bring all the notches, *b*, in line with the tongue, C, and allow the wheels and bolt to be moved back. Where there are three of the wheels, A, employed, a ring and a wheel or plate is attached to the shaft, B, to enable the operator to adjust it to the center wheel by moving the shaft outward until the outer surface of the wheel or plate is flush with the outer edge of the ring. After adjusting the center wheel, the shaft is pulled further out, so as to bring the wheel or plate clear of the edge of the ring, and the shaft is then free to move in the slots of the casing in order to move back the wheels and bolt.



ARNOLD'S PERMUTATION LOCK.